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(54) **Facing for absorptive articles and process for making it.**

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GB-A- 2 014 207
GB-A- 2 055 690
GB-A- 2 114 895
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Description

The present invention relates to facing for absorptive articles used to handle body fluid such as disposable diaper, inconsistence pad and sanitary napkin.

As facing for such absorptive articles from DE 3 137 052 there is known a two-layered non-woven fabric comprising an upper layer of hydrophobic fibres and a lower of hydrophilic fibres:
Although the problem of a relatively wet skin has been solved to some extent, the effect achieved by incorporation of hydrophobic fibres as the upper layer being a relatively dry skin, is largely limited by a requirement such that the upper layer should be formed as thinly as possible to maintain a desired permeability for body fluid. Thus, the concept of this prior art can not be a satisfactory solution.

GB-PS 2 114 895 shows a sanitary towel having an internal absorbent medium, with a fabric covering material. This covering fabric material has an integrated two-layer structure, the outer layer of which forming the surface that is in contact with the skin of the wearer and the inner layer disposed inside said outer layer. This material consisting essentially from 30 to 80% by weight of heatfusible fibers which are fusible at a temperature of 90 to 140° and from 70 to 20% by weight of hydrophobic fibers which are not fusible at a temperature below 140°C. The weight ratio of heatfusible fibers/hydrophobic fibers in the outer layer being from 50/50 to 100/0, whereas such ratio in the inner layer being from 20/80 to 60/40.

It is known from GB-PS 2 055 690 a non-woven fabric for sanitary towels including a first skin-contacting layer, a third layer forming the back face and a second layer which is interposed therebetween. The first layer being composed of 1,5 to 3 denier rayon fibers and thermoplastic fibers. The weight ratio of rayon fibers to thermoplastic fibers being 40/60 to 70/30 and being densely compacted to a paper-like form, the second layer being composed of 3 to 7 denier rayon fibers and thermoplastic fibers, so weight ratio of rayon fibers to thermoplastic fibers being 60/40 to 90/10 and being loosely compacted, the third layer being composed of 1,5 to 3 denier rayon fibers and thermoplastic fibers and the weight ratio of rayon fibers to thermoplastic fibers being 40/60 to 90/10 the density of the structure being 15 to 30 g/m^2.

From GB-PS 2 014 207 there is known a non-woven covering layer for nappy or sanitary towel. The surface material is a non-woven fabric comprising from 60 to 90 wt.% of hydrophilic fibers and the balance, i.e. from 40 to 10 wt.% is hydrophobic fibers and wherein the hydrophilic fibers comprise two kinds of fibers of different thickness i.e. of from 10 to 90 wt.% of hydrophilic fibers having a thickness from 1.5 to 3 denier and a balance of from 90 to 10 wt.% of hydrophilic fibers having a thickness of from 4 to 7 denier.

Characteristics desired for the facing of such absorptive articles include a high permeability, no wet touch remaining on the facing after permeation of body fluid, i.e., a dry touch to the wearer's skin, being free from rewetting with body fluid occurring under a pressure upon the facing after body fluid has permeated the facing, and a comfortable touch when worn.

Said prior art has not been able to adjust or control these characteristics which conflict one another in the desired amount.

A principal object of the present invention is, therefore, to provide an improved facing for absorptive articles so as to satisfy the requirements for the respective characteristics simultaneously.

The present invention broadly resides in facing for absorptive articles comprising a combined non-woven fabric having two layers of different fibre-compositions, i.e., a first layer defining a surface to be in contact with the wearer's skin and a second layer defining a rear side with respect to said surface, said first layer being composed of hydrophobic fibres in 70 to 100% by weight and hydrophilic fibres in 0 to 30% by weight, having a basic weight of 15 g/m^2 at least and a patern of apertures with the area of 0.29 to 30mm^2 formed in said first layer at a ratio of 10 to 50% with respect to its total area; and said second layer being composed of hydrophilic fibres in 50 to 100% by weight and hydrophobic fibres in 0 to 50% by weight, having a basic weight of 5 to 50g/m^2 and no aperture.

The present invention resides also in a process for making said facing, said process comprising steps of subjecting fibrous webs to high velocity water jet to obtain said first layer and said second layer, respectively, and then bonding these two layers to each other, or subjecting said fibrous web to said high velocity water jet to obtain said first layer while fusing fibres of associated fibrous web together to form said second layer and bonding these two layers to each other.

Above-mentioned and other features of the present invention will be apparent from the following description in reference with embodiments as shown by the accompanying drawing.

Fig. 1 is a partially enlarged perspective view schematically illustrating facing according to the present invention;

Fig. 2 is a partially enlarged sectional view schematically illustrating the first layer and the second layer of said facing formed by high velocity water jet process and then bonded together;

Fig. 3 is a partially enlarged sectional view schematically illustrating said first and second layers after said bonding has been achieved by heat treatment;

Fig. 4 is a fragmentary perspective view schematically illustrating said facing utilized for absorptive articles;

Fig. 5 is a side view schematically illustrating, by way of example, an apparatus for making said facing by high velocity water jet process;

Fig. 6 is a perspective view schematically illustrating a support roll arranged in said apparatus and having therearound aperture forming elements; and

Fig. 7 is a partially enlarged plan view schematically illustrating said support roll.

As seen in Figs. 1 through 3, facing 11 has a pattern of apertures 12 and comprises an integrally combined non-woven fabric having a first layer 13 defining a surface to be in contact with the wearer's skin and a second layer 14 defining a rear side with respect to said surface

To achieve the object of the present invention in the described example, the first layer 13 has a fibrous composition of hydrophobic fibres in 100% by weight, a basic weight of 15g/m^2, a density of 0.03 g/cm^3 or more, preferably of 0.5 to 1. The maximum acceptable content of hydrophilic fibres will be 30% by weight. To achieve the object of the invention, the second layer 14 is composed of hydrophilic fibres in 100% by weight, and has a basic weight of 5 to 50 g/m^2, a density of 0.01 to 0.2 g/cm^3, preferably of 0.02 to 0.07 g/cm^3 and a denier of 0.7 to 15, preferably of 3 to 8. Depending on the size of each aperture 12 formed in the first layer 13, the ratio of the apertures with respect to the total area of said first layer 13, said density of the second layer 14, etc., a presence of hydrophobic fibres up to 50% by weight is suitable to advantageously hold a desired elasity under a wet condition. The apertures 12 formed elliptically in the first layer 13, to achieve the object of the invention, are of an area from 0.29 to 30 mm^2, preferably from 0.35 to 11 mm, an aperture ratio from 10 to 60%, preferably from 20 to 50% and are formed by pushing or thrusting, i.e., distributing fibres aside without partially cutting off the fibres of the first layer 13 for improvement of strength, touch and appearance. It should be noted here that the configuration of the apertures is not limitted to that as shown in Fig. 1.

The first layer 13 is a non-woven fabric in which individual fibres are entangled with one another. Such non-woven fabric is obtained by subjecting web of loose fibres disposed in random relationship with one another as initial material for non-woven fabric to high velocity water jet treatment so as to achieve a desired fibre entanglement on a support. The second layer 14 is also non-woven fabric in which individual fibres are mutually entangled but no aperture is formed. This does not exclude a possibility that the second layer 14 may be formed by fusing individual fibres together through the heat treatment. In the latter case, all or a part of hydrophobic fibres contained in the second layer 14 preferably comprises thermofusible fibres. The optimal process for formation of the first layer 13 and the second layer 14 in the form of non-woven fabric and integrally combining these two components comprises, in one embodiment, steps of subjecting fibrous web to be formed into the first layer 13 to said treatment so as to achieve a desired fibre entanglement, then placing other fibrous web to be formed into the second layer 14 upon said first layer 13, subjecting the last-mentioned fibrous web placed upon said first layer 13 to said treatment again so as to achieve the similar fibre entanglement not only among individual fibres of said second layer 14 but also with those of said first layer 13. In another embodiment, said fibrous web to be formed into the second layer 14 and containing therein said thermo-fusible fibres is placed upon the first layer 13 formed in accordance with the treatment as adopted in the first embodiment and then this assembly is subjected to said heat treatment so that individual fibres of said fibrous web destined to be formed into the second layer 14 may be fused together not only in this fibrous web but also with individual fibres in the first-mentioned fibrous web destined to be formed into the first layer 13. When the process is implemented in the first-mentioned manner, fibres of the first layer 13 and the second layer 14 are partially mixed and a boundary between these two layers is not clear, as seen in Fig. 2 and, when the process is implemented in the second manner, fibres of the first layer 13 and the second layer 14 are fused together exclusively along a boundary of these two layers, so that this boundary is relatively clear, as seen in Fig. 3.

Formation of the first layer 13 by the fibre entanglement is extremely convenient for formation of the apertures 12 by distributing fibres aside. Specifically, the fibrous web destined to be formed into the first layer 13 may be subjected to the high velocity water jet treatment as said web travels on a support having therearound aperture formation elements to achieve the desired fibre entanglement and simultaneously to form the apertures as said aperture formation elements distribute fibres aside.

Hydrophobic fibres useful for the first layer 13 include polyester, polypropyrene, polyethylene, acryl, polyurethane fibres, etc. and the second layer 14 may be formed by synthetic fibres such as polyester of which the fibre surface has been imparted with hydrophilic nature, rayon fibres, cotton fibres, etc. Although these may be used independently or in combination, it is rather preferred to form the first layer 13 from polyester fibres and to form the second layer 14 substantially from polyester fibres treated so as to obtain hydrophilic nature. Such treatment is preferably achieved by use of the treatment agents obtained, for example, by processes for preparing treatment agents for polyester moldings as disclosed in Japanese Patent Publications Nos. 44 - 2580, 44 - 2581 and 44 - 3967.

The important factors in the present invention as have been numerically specified above will be further considered. The first layer 13 having a basic weight less than 15g/m^2 and a density less than 0.03g/cm^3 could not satisfactorily prevent body fluid from flowing backwards resulting in so-called rewetting effect, the second layer 14 having a basic weight of 50g/m^2 or more and a density of 0.2g/cm^3 or more would decrease a permeability for body fluid, the first layer 13 having the apertures with the area less than 0.29mm^2 and an aperture ratio less than 10% would result in an unacceptably low permeability for body fluid, and the first layer 13 having the apertures 12 with the area of 30mm^2 or larger and an aper-

ture ratio of 60% or higher would cause the second layer 14 to come in direct contact with the wearer's skin through said apertures or would cause body fluid to flow backwards through said apertures cause a discomfortably wet feel. It should be noted that, although the first layer 13 exhibits no difference in its function even when the basic weight exceeds a range 40g/m² or more, such excessive basic weight is economically disadvantageous.

The facing 11 constructed as has been mentioned above is utilized, as shown by way of example in Fig. 4, for the absorptive articles such as disposable diaper, inconsistence pad and sanitary napkin which basically comprise an absorbent 15 substantially made of cotton-like woody pulp carrying on its top said facing 11 with the first layer 13 thereof defining the upper surface and provided on the underside of said absorbent 15 with a water-impermeable sheet 16 such as plastic film. The rest arrangement in the absorptive articles is similar to that in such articles of prior art. When body fluid is excreted on a certain spot of the first layer 13 constituting the facing 11 now utilized as the component of the absorptive article, body fluid permeate the second layer 14 through the respective apertures 12 present within said spot and is absorbed by the absorbent 15. The body fluid thus absorbed in substantially prevented from flowing backwards through the facing 11, since at least 70% by weight of fibres constituting the first layer 13 is hydrophobic and the apertures 12 are formed with the area of 0.29mm² or less at the aperture ratio of 60% or less. The second layer 14 will somewhat swell at the respective apertures 12, depending on the manner in which the first layer 13 is combined with the second layer 14. Even in such a case the second layer 14 is well behind the surface of the first layer 13, so that the second layer 14 is substantially kept from direct contact with the wearer's skin even when the second layer 14 might be somewhat wet with body fluid. Further, the facing 11 is breathable not only at portions corresponding to the respective apertures 12 but also as a whole, since the facing 11 is formed of fibres wholly entangled with one another or partially fused together.

To obtain the first layer 13 of the non-woven fabric which constitutes the facing according to the present invention, fibres are entangled with one another and the apertures are formed preferably by an apparatus as shown by Figs. 5 and 6, although the high velocity water jet apparatus of prior art may be used. The apparatus of Fig. 5 includes a belt conveyor 20, water screen supply means 21, a first support roll 22, water jet means 23 opposed to a periphery of said first support roll 22, another belt conveyor 24, a second support roll 25 carrying therearound aperture formation elements, a plurality of water jet means 26 arranged at predetermined intervals and opposed to a periphery of said second support roll 25, and a pair of squeeze rolls 27. The water screen supply means 21 includes a reservoir 28 adapted to maintain a predetermined quantity of water overflowing it, and a tilting plate 29 along which said predetermined quantity of water continuously flows down, forming a water screen which is supplied over fibrous web 30. Thereby, the fibrous web 30 is effectively prevented from becoming fluffy and maintains its texture so that the fibre entanglement treatment may be effectively achieved. The second support roll 25 is provided in the form of a cylinder having predetermined diameter and length. Said cylinder has a repeating pattern of projections 31 arranged on a smooth peripheral surface of said cylinder at predetermined spacings from one another, and, in the flat area defined among said projections, a plurality of perforations 32 for drainage. Each of said projections 31 is preferably configured so that the apertures 12 may be formed in the fibrous web 30 at a high efficiency and the non-woven fabric thus formed may be readily peeled off from the second support roll 25. To this end, the projection 31 is preferably taperred from its base to its top, for example, in the form of a semi-sphere. The diameter, the area ratio with respect to the peripheral surface of the cylinder and the distribution pattern of the projections 31 substantially correspond to those of the apertures 12 in the first layer 13, and the height of each projection 31 is preferably selected between 0.4 and 10mm in order that the apertures 12 may be clearly formed in the non-woven fabric. The first support roll 22 preferably includes a plurality of perforations (not shown) for drainage of 0.2 to 1,0mm in diameter, distributed at predetermined spacings over its peripheral surface at an occupation ratio of 2.5 to 30% with respect to a total area of said peripheral surface. The first support roll 22 and the second support roll 25 include suction means (not shown) therein for suction drainage so that an efficiency at which the drainage on the outer surfaces of the respective rolls 22, 25 may be promoted. Both the first support roll 22 and the second support roll 25 have predetermined hardnesses so as to assure that the water streams directed from the respective jet means 23, 26 bound on the roll surfaces of said first and second supports 22, 25, respectively, and these bounding water streams serve again to effect the fibre entanglement. The fibrous web 30 is preliminarily fibre-entanglement treated on the first support roll 22 under water jet directed from the jet means 23, then fully treated on the second support roll 25 under water streams directed from the respective jet means 26 and simultaneously provided with the apertures as the respective projections 31 distribute the fibres aside. A back pressure of water stream is preferably selected in a range from 20 to 100kg/cm². At a back pressure less than 20kg/cm², a sufficient energy will not be obtained to achieve a desired fibre entanglement effect and both the efficiency and the strength of such fibre entanglement will be inadequate. At a back pressure higher than 100kg/cm², the cost will become too high to be commercially reasonable and a texture of the fibrous web 30 will be easily disturbed. Water quantity is preferably selected in a range from 0.5 to 20/m². Water quantity less than 0.5/m² will be unable to provide sufficient efficiency and strength of fibre entanglement. Depending on the jet pressure, and diameter as well as number of orifices arranged in the water jet means 23, 26, even with a water quantity of 20/m² or higher, neither the efficiency nor the strength of fi-

bre entanglement could be improved in proportion to such water quantity and, in consequence, such a level of water quantity will merely result in economical disadvantage.

The manner in which the individual fibres are fused together to form the second layer 14 of the non-woven fabric as the facing according to the present invention is well known to those skilled in the art and will not be described in details.

(Examples)

Various examples are listed in Table 1.

Table 2 indicates properties of the examples as listed in Table 1 together with properties of controls.

Control 1 is the facing utilized by the applicant in disposable diaper. This is the non-woven fabric formed by fibre entanglement treatment under high velocity water jet and comprising 50% by weight of 1.5d X 51mm rayon fibres and 50% by weight of 1.4d X 44mm polyester fibres. This non-woven fabric has a basic weight of 30g/m^2.

Control 2 is the facing utilized by A company in disposable diaper manufactured by this company. This is made of 25g/m^2 polyethylene film provided with a plurality of apertures with 0.5mmϕ, 1mm spacing and 20% aperture ratio.

The properties listed in Table 2 were determined by testing procedures as set forth below:

(1) Permeability

Sample(facing) was laid on top of an absorbent made of cotton-like woody pulp and then 5ml of artificial urine was poured down from a beaker at once over the sample. Seconds taken for complete permeation of the sample were counted.

(2) Rewet property

Sample was placed on top of an absorbent made of 100cm^2 cotton-like woody pulp, then artificial urine was poured down from a burette over the sample by a quantity 5-times a weight of the absorbent, thereafter artificial skin sheet of rubber was laid on the sample and finally a weighing plate of 100cm^2 and 7 kg was put on this assembly. After 3 minutes have elapsed, the weighing plate was removed and a quantity of artificial urine clinging to the artificial skin sheet was measured.

(3) Dry touch property

The sample after said rewet property was determined was touched by hand and a wetness remaining thereon was tested.

Table 1

Example	First Layer Fibre Type	Aperture area (mm^2)	Aperture Ratio (%)	B.W. (g/m^2)	Second Layer Fibre Type	B.W. (g/m^2)	Both Layers were combined By
1	PET0. 7d x 38 mm (100%)	0.295	20	25	Hydrophilic nature imparted PET1.5d x 51 mm (100%)	15	Water Jet Treatment
2	PET0. 7d x 38 mm (100%)	2.64	20	25	Hydrophilic nature imparted PET1.5d x 51 mm (100%)	15	Water Jet Treatment
3	PET0. 7d x 38 mm (100%)	10.60	20	25	Hydrophilic nature imparted PET1.5d x 51 mm (100%)	15	Water Jet Treatment
4	PET0. 7d x 38 mm (100%)	29.5	20	25	Hydrophilic nature imparted PET1.5d x 51 mm (100%)	15	Water Jet Treatment
5	PET0. 7d x 38 mm (100%)	2.64	10	25	Hydrophilic nature imparted PET1.5d x 51 mm (100%)	15	Water Jet Treatment
6	PET0. 7d x 38 mm (100%)	2.64	30	25	Hydrophilic nature imparted PET1.5d x 51 mm (100%)	15	Water Jet Treatment
7	PET0. 7d x 38 mm (100%)	2.64	50	25	Hydrophilic nature imparted PET1.5d x 51 mm (100%)	15	Water Jet Treatment
8	PET0. 7d x 38 mm (100%)	2.64	70	25	Hydrophilic nature imparted PET1.5d x 51 mm (70%) Low m.p. PET3d x 51 mm (30%)	15	Heat Fusion Treatment
9	PET1. 4d x 44 mm (70%) Hydrophilic nature imparted PET1.5d x 51 mm (30%)	2.64	70	25	Hydrophilic nature imparted PET1.5d x 51 mm (70%) Low m.p. PET3d x 51 mm (30%)	15	Water Jet Treatment

Table 2

Example	Permeability	Rewet Property	Dry Touch Property
1	15 sec	5 mg/100cm^2	A
2	Shorter than 1 sec	12	A
3	Shorter than 1 sec	15	C
4	Shorter than 1 sec	24	C
5	7 sec	6	B
6	Shorter than 1 sec	6	B
7	Shorter than 1 sec	20	C
8	Shorter than 1 sec	13	A
9	Shorter than 1 sec	12	A
Control			
1	Shorter than 1 sec	30	D
2	Shorter than 1 sec	15	A

Note: A to D indicate better order, so that A is best whilst D is worst.

Claims

1. Facing for absorptive articles comprising a combined non-woven fabric having two layers of different fibre-compositions, i.e., a first layer (13) defining a surface to be in contact with the wearer's skin and a second layer (14) defining a rear side with respect to said surface, said first layer (13) being composed of hydrophobic fibres in 70 to 100% by weight and hydrophilic fibres in 0 to 30% by weight, having a basic weight of 15 g/m^2 at least and a pattern of apertures (12) with the area of 0.29 to 30 mm^2 formed in said first layer at a ratio of 10 to 50% with respect to its total area; and said second layer (14) being composed of hydrophilic fibres in 50 to 100% by weight and hydrophobic fibres in 0 to 50% by weight, having a basic weight of 5 to 50 g/m^2 and no aperture.

2. Facing for absorptive articles according to Claim 1, wherein said apertures (12) are formed by distributed aside fibres.

3. Facing for absorptive articles according to Claim 2, wherein the fibres at both of said first layer (13) and said second layer (14) are entangled and integrally combined with each other and with one another.

4. Facing for absorptive articles according to Claim 1, wherein the hydrophobic fibres contained in said second layer (14) are wholly or partially composed of thermo-fusive fibres which are fusive at a temperature of 90 to 140°C.

5. Facing for absorptive articles according to Claim 4, wherein said first layer (13) comprises a non-woven fabric of entangled fibres and said second layer comprises a non-woven fabric of fibres fusioned and which are integrally combined with said first layer.

6. Facing for absorptive articles according to Claim 1, wherein fibres contained in said first layer (13) have a denier of 0.2 to 2 and a density of 0.03 to 0.3g/cm^3 while fibres contained in said second layer (14) have a denier of 0.7 to 15 and a density of 0.01 to 0.2g/cm^3.

7. Process for making facing of absorptive articles comprising steps of forming a non-woven fabric provided with a pattern of apertures with the area of 0.29 to 30mm^2 and at an aperture ratio of 10 to 50% from first fibrous web destined to be formed into a first layer, said first fibrous web being composed of hydrophobic fibres in 70 to 100% by weight and hydrophilic fibres in 0 to 30% by weight and having a basic weight of 15g/m^2 at least; forming a non-woven fabric having no aperture from second fibrous web as held placed on the first-mentioned non-woven fabric, said second fibrous web being destined to be formed into a second layer and composed of hydrophilic fibres in 50 to 100% by weight and hydrophobic fibres in 0 to 50% by weight, said second fibrous web having a basic weight of 5 to 50g/m^2; and simultaneously combining said second fibrous web integrally with said first layer.

8. Process for making facing of absorptive articles according to Claim 7, wherein said first fibrous web is subjected to high velocity water jet treatment on a support carrying thereon aperture formation elements distributed at predetermined spacings so as to achieve desired fibre entanglement and simultaneously fibres of said first fibrous web are distributed by said aperture formation elements aside so as to form said apertures through said first fibrous web, thus forming said first layer.

9. Process for making facing of absorptive articles according to Claim 8, wherein said second fibrous web as held placed on said first layer is subjected to high velocity water jet treatment so as to achieve desired fibre entanglement in this second fibrous web as well as with fibres of said first layer, thus forming said second layer.

10. Process for making facing of absorptive articles according to Claim 1 or 8, wherein said second fibrous web wholly or partially composed of hydrophobic and thermo-fusive fibres being fusive at a temperature of 90 to 140°C is treated at said temperature as held placed on said first layer so as to achieve desired fibre fusion in this second fibrous web as well as with fibres of said first layer, thus forming said second layer.

11. Process for making facing of absorptive articles according to Claim 7, wherein the fibres of said first fibrous web present a denier of 0.2 to 2 while the fibres of said second fibrous web present a denier of 0.7 to 15.

12. Process for making facing of absorptive articles according to any one of Claims 7, 8, 9 and 10, wherein said first layer and said second layer are treated so that these two layers respectively present densities of 0.03 to 0.3g/cm^3 and 0.01 to 0.2g/cm^3.

13. Process for making facing of absorptive articles according to Claim 8, wherein said aperture formation elements comprises projections arranged on a surface of said support.

Patentansprüche

1. Deckschicht für eine absorbierende Vorlage, bestehend aus einem kombinierten Faservlies mit zwei Lagen unterschiedlicher Faserkompositionen, nämlich einer ersten Lage (13), welche die mit der Haut des Trägers in Kontakt tretende Oberfläche definiert und einer zweiten Lage (14), die bezüglich der Oberfläche eine rückwärtige Seite definiert, wobei die erste Lage (13) zusammengesetzt ist aus 70 bis 100 Gew.-% wasserabstoßenden Fasern und 0 bis 30 Gew.-% wasserbindenden Fasern, mit einem Basisgewicht von mindestens 15 g/m^2 und einem Muster aus Öffnungen (12) mit einer Fläche von 0,29 bis 30 mm^2, die in der ersten Lage mit einem Prozentsatz von 10 bis 50% bezüglich der Gesamtfläche ausgebildet sind und wobei die zweite Lage (14) aus wasserbindenden Fasern mit einem Anteil von 50 bis 100 Gew.-% und wasserabstoßenden Fasern mit einem Anteil von 0 bis 50 Gew.-% und einem Grundgewicht von 5 bis 50 g/m^2 zusammengesetzt ist und keine Öffnungen aufweist.

2. Deckschicht für eine absorbierende Vorlage nach Anspruch 1, wobei die Öffnungen (12) durch zur Seite gedrängte Fasern gebildet sind.

3. Deckschicht für eine absorbierende Vorlage nach Anspruch 2, wobei die Fasern sowohl der ersten Lage (13) als auch der zweiten Lage (14) verschlungen und untereinander und miteinander integral verbunden sind.

4. Deckschicht für eine absorbierende Vorlage nach Anspruch 1, wobei die wasserabstoßenden Fasern in der zweiten Lage (14) vollständig oder teilweise aus warmschmelzbaren Fasern gebildet ist, die bei einer Temperatur von 90 bis 140°C schmelzen.

5. Deckschicht für eine absorbierende Vorlage nach Anspruch 4, wobei die erste Lage (13) ein Faservlies aus Wirrfasern und die zweite Lage ein Faservlies aus miteinander verschmolzenen Fasern umfaßt, welche integral mit der ersten Lage verbunden sind.

6. Deckschicht für eine absorbierende Vorlage nach Anspruch 1, wobei die Fasern in der ersten Lage (13) 0,2 bis 2 Denier und eine Dichte von 0,03 bis 0,3 g/cm^3 aufweisen, während die Fasern in der zweiten Lage (14) 0,7 bis 15 Denier und eine Dichte von 0,01 bis 0,2 g/cm^3 aufweisen.

7. Verfahren zum Herstellen einer Deckschicht für eine absorbierende Vorlage mit den Verfahrensschritten:

– Ausbilden eines Faservlieses, das mit einem Muster aus Öffnungen mit einer Fläche von 0,29 bis 30 mm^2 und einem Öffnungsverhältnis von 10 bis 50% aus einer ersten fasrigen Bahn, die in eine erste Lage geformt werden soll, ausgebildet wird, wobei die erste fasrige Bahn aus 70 bis 100 Gew.-% wasserabstoßenden Fasern und 0 bis 30 Gew.-% wasserbindenden Fasern und einem Basisgewicht von mindestens 15 g/m^2 zusammengesetzt ist;

– Ausbilden eines Faservlieses ohne Öffnungen aus einer zweiten fasrigen Bahn, die auf dem erst erwähnten Faservlies aufgelegt wird, wobei die zweite fasrige Bahn dazu bestimmt ist, in eine zweite Lage geformt zu werden, wobei sie aus 50 bis 100 Gew.-% wasserbindenden Fasern und 0 bis 50 Gew.-% wasserabstoßenden Fasern gebildet ist und wobei die zweite fasrige Bahn ein Basisgewicht von 5 bis 50 g/m^2 aufweist; und

– gleichzeitiges integrales Verbinden der zweiten fasrigen Bahn mit der ersten Lage.

8. Verfahren zum Herstellen einer Deckschicht für eine absorbierende Vorlage nach Anspruch 7, wobei die erste fasrige Bahn einer Wasserstrahlbehandlung mit Hochgeschwindigkeitswasserstrahlen auf einer Unterlage ausgesetzt ist, welche an vorbestimmten Stellen verteilt Öffnungen bildende Elemente trägt, um die gewünschte Faserverschlingung zu erreichen, wobei gleichzeitig Fasern der ersten fasrigen Bahn durch die Öffnungen bildenden Elemente zur Seite gedrängt werden, wodurch die genannten Öffnungen durch die erste fasrige Bahn hindurch gebildet werden, wobei auf diese Weise die erste Lage ausgebildet wird.

9. Verfahren zum Herstellen einer Deckschicht für eine absorbierende Vorlage nach Anspruch 8, wobei die zweite fasrige Bahn, während sie auf der ersten Lage gehalten wird, einer Wasserstrahlbehandlung mit Hochgeschwindigkeitswasserstrahlen ausgesetzt wird, um die gewünschte Faserverwirrung in dieser zweiten fasrigen Bahn, wie auch mit den Fasern der ersten Lage zu erzielen, wobei auf diese Weise die zweite Lage gebildet wird.

10. Verfahren zum Herstellen einer Deckschicht für eine absorbierende Vorlage nach Anspruch 1 oder 8, wobei die zweite fasrige Bahn, die vollständig oder zum Teil aus wasserabstoßenden und warmschmelzbaren Fasern, die bei einer Temperatur von 90 bis 140°C schmelzbar sind, gebildet ist, dieser Temperatur ausgesetzt wird, während sie auf der ersten Lage plaziert ist, um die gewünschte Faserverschmelzung in dieser zweiten fasrigen Bahn, wie auch mit den Fasern der ersten Lage zu erzielen, um auf diese Weise die zweite Lage zu bilden.

11. Verfahren zum Herstellen einer Deckschicht für eine absorbierende Vorlage nach Anspruch 7, wobei die Fasern der ersten fasrigen Bahn 0,2 bis 2 Denier aufweisen, während die Fasern der zweiten fasrigen Bahn 0,7 bis 15 Denier aufweisen.

12. Verfahren zum Herstellen einer Deckschicht für eine absorbierende Vorlage nach einem beliebigen der Ansprüche 7, 8, 9 und 10, wobei die erste Lage und die zweite Lage behandelt werden, so daß diese zwei Lagen Dichten von 0,03 bis 0,3 g/cm³ und 0,01 bis 0,2 g/cm³ aufweisen.

13. Verfahren zum Herstellen einer Deckschicht für eine absorbierende Vorlage nach Anspruch 8, wobei die die Öffnungen bildenden Elemente Vorsprünge umfassen, welche auf einer Oberfläche der Auflage angeordnet sind.

Revendications

1. Doublure pour articles absorbants, caractérisée en ce qu'elle comporte une étoffe non tissée ayant deux couches de différentes compositions de fibres, c'est-à-dire une première couche (13) définissant une surface à mettre en contact avec la peau d'un porteur, et une seconde couche (14) définissant un côté arrière par rapport à ladite surface, ladite première couche (13) étant composée de fibres hydrophobes pour 70 à 100% de son poids, et de fibres hydrophiles pour 0 à 30% de son poids présentant un poids de base de 15 g/m² au moins et un motif d'ouverture (12) avec une surface de 0,29 à 30 mm² ménagées dans ladite première couche avec un rapport de 10 à 50% de sa surface totale; et ladite seconde couche (14) étant composée de fibres hydrophiles pour 50 à 100% en poids et de fibres hydrophobes pour 0 à 50% en poids, présentant un poids de base de 5 à 50 g/m², et aucune ouverture.

2. Doublure pour articles absorbants selon la revendication 1, dans laquelle lesdites ouvertures (12) sont formées par des fibres qui ont été écartées.

3. Doublure pour articles absorbants selon la revendication 2, dans laquelle les fibres, aussi bien de ladite première couche (13) que de ladite seconde couche (14) sont enchevêtrées et liées en bloc entre elles et les unes aux autres.

4. Doublure pour articles absorbants selon la revendication 1, dans laquelle les fibres hydrophobes contenus dans ladite seconde couche (14) sont composées, en tout ou partie, de fibres thermofusibles, qui sont fusibles à des températures de 90° à 140°C.

5. Doublure pour articles absorbants selon la revendication 4 dans laquelle ladite première couche (13) comporte une étoffe non tissée de fibres enchevêtrées, et ladite seconde couche comporte une étoffe non tissée de fibres fusionnées et qui sont liées en bloc avec ladite première couche.

6. Doublure pour articles absorbants selon la revendication 1, dans laquelle les fibres contenues dans ladite première couche (13) présentent un denier de 0,2 à 2 et une densité de 0,03 à 0,3 tandis que les fibres contenues dans ladite seconde couche (14) présentent un denier de 0,7 à 15 et une densité de 0,01 à 0,2.

7. Procédé de fabrication de doublure pour articles absorbants, caractérisé en ce qu'il comprend les étapes suivantes: former une étoffe non tissée munie d'un motif d'ouvertures avec une surface de 0,29 à 30 mm² et un support d'ouverture de 10 à 50% à partir d'une première matte de fibres destinées à constituer une première couche, ladite première matte de fibres étant composée de fibres hydrophobes pour 70 à 100% en poids et présentant un poids de base d'au moins 15 g/m²; former une étoffe non tissée ne présentant pas d'ouvertures à partir d'une seconde matte de fibres, comme elle est placée sur l'étoffe non tissée mentionnée en premier lieu, ladite seconde matte de fibres étant destinée à constituer, une seconde couche, et composée de fibres hydrophiles pour 50 à 100% en poids, et de fibres hydrophobes pour 0 à 50% en poids, ladite seconde matte de fibres présentant un poids de base de 5 à 50 g/m²; et liant en bloc simultanément ladite seconde matte de fibres avec ladite première couche.

8. Procédé de fabrication de doublure pour articles absorbants suivant la revendication 7, dans lequel ladite première matte de fibres est soumise à un traitement par un jet d'eau à grande vitesse sur un support transportant des éléments formateurs d'ouvertures répartis à espacements prédéterminés en sorte d'obtenir l'enchevêtrement de fibres voulu, et simultanément des fibres de ladite première matte de fibres sont réparties de côté par lesdits éléments formateurs d'ouvertures, en sorte de former lesdites ouvertures à travers ladite première matte de fibres, formant ainsi ladite première couche.

9. Procédé de fabrication d'une doublure pour articles absorbants selon la revendication 8, dans lequel ladite seconde matte de fibres, comme placée sur ladite première couche est soumise à un traitement par un jet d'eau à grande vitesse en sorte d'obtenir l'enchevêtrement souhaité dans ladite seconde matte de fibres, aussi bien qu'avec les fibres de ladite première couche, formant ainsi ladite seconde couche.

10. Procédé de fabrication de doublure pour articles absorbants suivant les revendications 1 ou 8, dans lequel ladite seconde matte de fibres, composée en tout ou partie de fibres hydrophobes et thermofusibles, étant fusibles à une température de 90° à 140°C est traitée à ladite température comme pla-

cée sur ladite première couche en sorte d'obtenir la fusion voulue des fibres dans ladite seconde matte de fibres aussi bien qu'avec les fibres de ladite première couche, formant ainsi ladite seconde couche.

11. Procédé de fabrication d'une doublure d'articles absorbants suivant la revendication 7, dans lequel les fibres de ladite première matte de fibres présente un denier de 0,2 à 2, tandis que les fibres de ladite seconde matte de fibres présentent un denier de 0,7 à 15.

12. Procédé de fabrication de doublure d'articles absorbants suivant l'une quelconque des revendications 7, 8, 9 et 10, dans lequel ladite première couche et ladite seconde couche sont traitées de telle sorte que ces deux couches présentent respectivement des densités de 0,03 à 0,3 et 0,01 à 0,2.

13. Procédé de fabrication de doublure d'articles absorbants suivant la revendication 8, dans lequel lesdits éléments formateurs d'ouvertures comportent des saillies disposées sur une face dudit support.

FIG.1

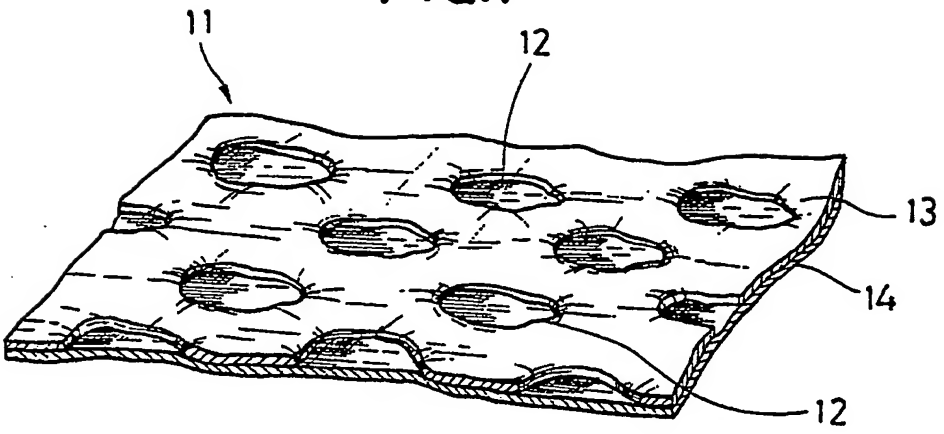

FIG.2

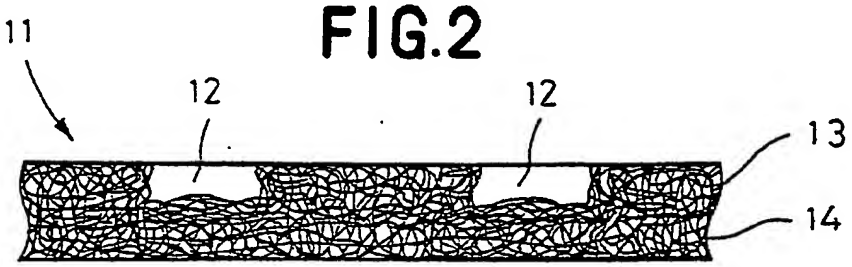

FIG.3

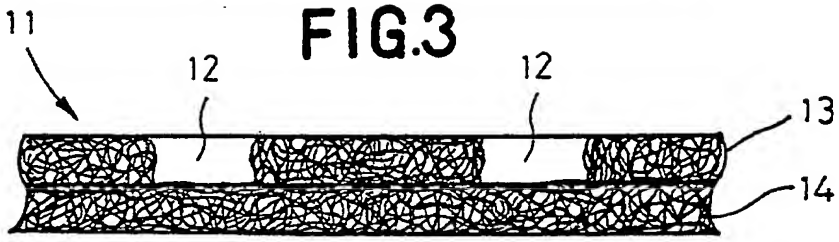

FIG.4

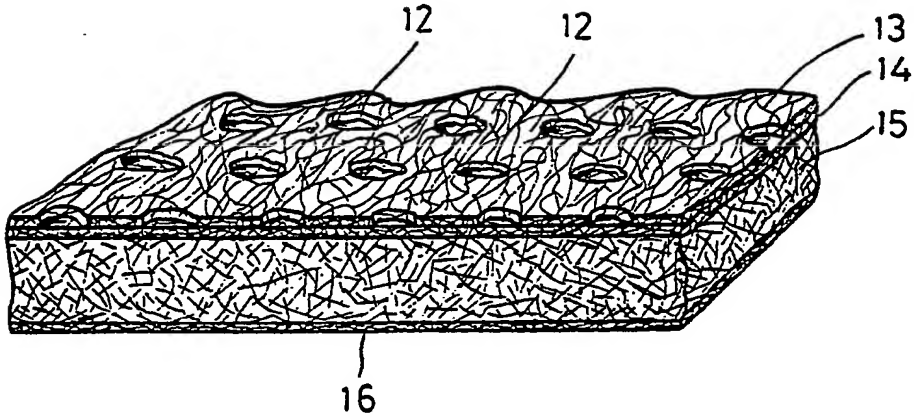

FIG.5

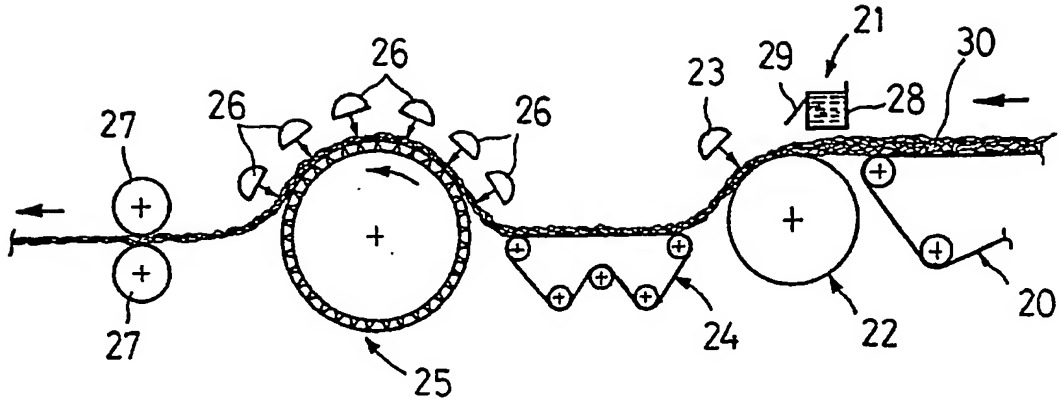

FIG.6

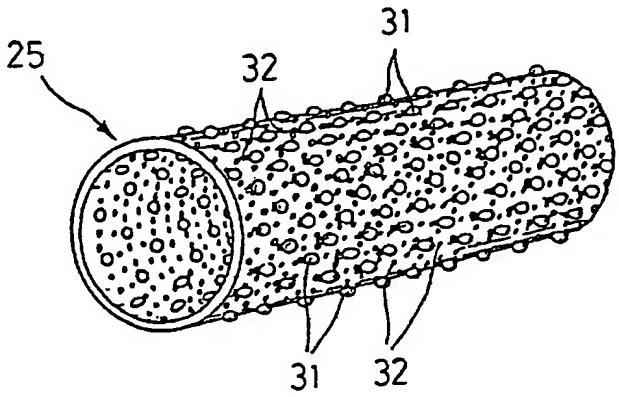

FIG.7